CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

FINAL ORDER No. 92-026
NPDES NO. CA0029033

RE-ISSUANCE OF WASTE DISCHARGE REQUIREMENTS FOR:

VARIAN ASSOCIATES, INC.
3100 JAY STREET
SANTA CLARA, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. Varian Associates, Inc., hereinafter called the discharger, by application dated June 14, 1991, has applied for re-issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES).

2. The discharger operated a vacuum pump manufacturing plant at 3100 Jay Street in the city of Santa Clara, Santa Clara County (Figure 1, attached to this Order), located less than 1/4 mile southeast of the intersection of Highway 101 and Montague Expressway. The discharger's manufacturing operation was terminated in March 1985, and the current tenant of the site is DSC Communication Corp. The property is owned by A & P Family Investments.

3. Subsurface investigations initiated in November 1984 detected organic solvents in both soils and the shallow groundwater zone at the facility. The principal contaminants are 1,1,1-trichloroethane (TCA), 1,1-dichloroethane (1,1-DCA), and 1,1-dichloroethylene (1,1-DCE).

4. In November 1985, approximately 300 cubic yards of contaminated soil were excavated from the source area, treated and backfilled. In March 1986, the discharger initiated groundwater extraction and treatment. Two groundwater infiltration trenches have been installed; the collected groundwater is pumped to an on-site air stripping tower. Approximately 16,323 gallons per day of treated groundwater is discharged to the storm drain, which flows to San Tomas Aquino Creek, tributary to South San Francisco Bay.

5. The discharger performs quarterly groundwater monitoring in ten on-site wells and four offsite wells. In September 1989, the discharger submitted a draft Remedial Investigation/Feasibility Study proposing cleanup alternatives. Based on more recent groundwater data, in May 1991 the discharger proposed an additional groundwater investigation to define the lateral boundaries of the plume.

6. Based upon the criteria in Board Resolution No. 88-160 and on information submitted by the discharger, the Board finds that treated extracted groundwater reclamation, re-use, or discharge to POTW from the Varian site is not feasible. The current tenant of the property indicated they could not use the reclaimed water as either process water or irrigation water. Although both the California Department of Transportation and the City of Santa Clara expressed interest in using the reclaimed water, the tenant would not agree to granting site access to outside parties. In addition, the Cities of Santa Clara and San Jose combined sanitation districts do not accept groundwater discharges. Therefore, no viable option for re-use appears available to the discharger.

7. This order updates and re-issues NPDES Permit No. CA0029033 originally issued on June 18, 1986 under Board Order No. 86-36. In updating and re-issuing the Permit, modifications have been made based on the amendments to the Water Quality Control Plan for the San Francisco Bay Region (Basin Plan), adopted by the Regional Board on December 11, 1991. These modifications are:

   a. Effluent limitations have been changed from quarterly median/daily maximum limits to instantaneous maximum limits for discharge to freshwater.

   b. Inorganic effluent limitations and a requirement to determine background concentrations of metals in groundwater has been added to the Permit.

8. Available data indicate that concentrations of metals in treated groundwater often exceed the shallow water effluent limitations. However, fish toxicity data from this site indicate that these elevated levels do not cause acute toxicity in fish. In many cases, the presence of metals in groundwater is due to natural factors related to soil and water chemistry, rather than contamination. The need to minimize the potential for aquatic toxicity due to elevated levels of metals must be balanced against the total mass loading from these discharges, the cost of treatment, and naturally occuring discharge of groundwater with equally high concentrations of metals.

9. The State Water Resources Control Board's Inland Surface Waters and Enclosed Bays and Estuaries Plans allow for short-term variances from Basin Plan provisions, if necessary, for discharges resulting from control measures to protect drinking water supplies and where natural background concentrations are typically greater than shallow water effluent limits. The variances will take the form of alternate effluent limitations. Therefore, the discharger will be required to determine background groundwater metals concentrations in the vicinity of its site. Based on the results of that study, the discharger will be

required to meet the effluent limitations for inorganics in Table 1 by March 31, 1993, or if the natural background concentrations are greater than the shallow water freshwater effluent limits, the Regional Board may consider granting a short-term variance to the discharger, and alternate limits will be developed.

10. The Basin Plan contains water quality objectives for South San Francisco Bay.

11. The existing and potential beneficial uses of South San Francisco Bay include:

- Contact and non-contact water recreation
- Wildlife habitat
- Preservation of rare and endangered species
- Estuarine habitat
- Fish spawning and migration
- Industrial service supply
- Shellfishing
- Navigation
- Ocean commercial and sport fishing

12. The Basin Plan prohibits discharge of wastewater which has "particular characteristics of concern to beneficial uses (a) at any point in San Francisco Bay south of the Dumbarton Bridge and (b) at any point where the wastewater does not receive a minimum initial dilution of at least 10:1 or into any nontidal water, dead-end slough, similar confined water, or any immediate tributary thereof."

13. The Basin Plan allows for exceptions to the prohibitions referred to in Finding #12 above when; (i) a discharge is part of a groundwater cleanup project, in accordance with Resolution No. 88-160, Regional Board Position on the Disposal of Extracted Groundwater from Groundwater Cleanup Projects, and it has been demonstrated that neither reclamation nor discharge to a POTW is technically and economically feasible, and (ii) the discharger has provided certification of the adequacy and reliability of treatment facililties and a plan that describes procedures for proper operation and maintenance of all treatment facilities.

14. Exceptions to the prohibitions referred to in Finding #12 are allowed by the amended Basin Plan and are warranted for this discharge because (i) the discharger has performed a water reclamation study and determined that reclamation or discharge to the POTW is not a viable option, (ii) the treatment facility, which has been operating since 1986, has proven adequate and reliable, and (iii) because receiving water concentrations are expected to be

below levels that would affect beneficial uses. Should studies indicate acute or chronic effects not currently anticipated, the Board will review the requirements of this Order based upon Limitation B.1.e.

15. The Basin Plan prohibits discharge of "all conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, to waters of the Basin." The discharger's ground water extraction and treatment systems and associated operation, maintenance, and monitoring plans constitute an acceptable control program for minimizing the discharge of toxicants to waters of the State.

16. Effluent limitations of this Order are based on the Clean Water Act, Basin Plan, State and U.S. Environmental Protection Agency (EPA) plans and policies, and best engineering and geologic judgement. EPA Region IX draft guidance "NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document" was also considered in the determination of effluent limits.

17. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

18. The Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

19. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the discharger, its agents, successors, and assigns in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. EFFLUENT LIMITATIONS

1. The effluent, at the discharge point to the storm drain, shall not contain constituents in excess of the limits contained in Table 1:

Table 1

Constituent	Instantaneous Maximum (µg/l)
VOCs	
trichloroethylene (TCE)	5
1,1,1-trichloroethane (TCA)	5
1,1-dichloroethane (1,1,-DCA)	5
1,1-dichloroethylene (1,1-DCE)	5
cis + trans-1,2-dichloroethylene	5
1,2-dichloroethane (1,2-DCA)	5
Any other volatile organic compound (as identified by EPA Method 601 or 624)	5
Inorganics (effective March 31, 1993)	
arsenic	5
cadmium	1.1
chromium (VI)	11
copper	11.8
cyanide	5.2
lead	3.2
mercury	.01
nickel	160
selenium	5
silver	4
zinc	110

2. The flow of the discharge shall not exceed 50,000 gallons per day.

3. The pH of the discharge shall not exceed 8.5 nor be less than 6.5.

4. In any representative set of samples, the discharges shall meet the following limit of quality:

   Toxicity: The survival of test fishes in 96-hour static bioassays of the undiluted effluent as discharged shall be a three sample moving median of 90% survival, and a 90 percentile value of not less than 70% survival in a single sample. The bioassays shall be performed according to protocols approved by the U.S. EPA or the State Water Resources Control Board or published by the American Society for Testing and Materials or American Public Health Association. Two fish species will be tested concurrently. These shall be the most sensitive two species determined from a single concurrent screening of three using two of the following three test fish species in parallel tests. The test fish shall be rainbow trout, fathead minnow, or three-spine stickleback.

   The compliance monitoring may be carried out with one, most sensitive fish species if both of the following conditions are met:

   - the discharger can document that the acute toxicity limitation, as described above, has not been exceeded during the previous three years, or that acute toxicity has been observed in only one of two fish species, **and**

   - a single screening using all three fish species confirms the documented pattern.

B. RECEIVING WATER LIMITATIONS

1. The discharge of wastes shall not cause the following conditions to exist in waters of the State at any place:

   a. floating, suspended, or deposited macroscopic particulate matter or foam;

   b. bottom deposits or aquatic growths;

   c. alteration of temperature or apparent color beyond present natural background levels;

d. visible, floating, suspended, or deposited oil or other products of petroleum origin;

e. toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

a. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.

b. Dissolved oxygen: 5.0 mg/l minimum. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause lesser concentration(s) than specified above, the discharge shall not cause further reduction in the concentration of dissolved oxygen.

c. Un-ionized ammonia (as N):

0.025 mg/l annual mean
0.4 mg/l maximum

3. This discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. PROVISIONS

1. The discharger shall comply with all sections of this order immediately upon adoption by the Board and upon starting any discharge, except as modified by the time schedule and tasks listed below.

   a. TASK 1: PROPOSAL FOR BACKGROUND METALS CONCENTRATIONS DETERMINATION

      COMPLETION DATE: JULY 18, 1992

      Submit a technical report acceptable to the Executive Officer which contains a proposal to determine the level of naturally occuring metals in the groundwater in the vicinity of the site. This study shall include, but need not be limited to, the location(s) of background groundwater samples to be obtained, sampling frequncy and analyses of both background, influent, and effluent stations, specification of the analytical method for metals and the expected laboratory detection limits, description of QA/QC, and a chemical use inventory for the time the discharger occupied the site.

   b. TASK 2: BACKGROUND METALS CONCENTRATIONS - RESULTS

      COMPLETION DATE: 90 days after Executive Officer approval of report required in TASK 1

      Submit a technical report acceptable to the Executive Officer containing the results of the groundwater metals concentration study. The report shall include a comparison of what occurs in the local shallow aquifer, both in background and site-affected groundwater, to the effluent limits for shallow water discharge as indicated in Table 1. Should results of the study indicate that the natural background metals concentrations cause the effluent to exceed shallow water effluent limits, the discharger shall provide a technical and cost analysis of increased treatment to reduce mass loading of metals.

2. The discharger shall comply with the self-monitoring program as adopted by the Board and as may be amended by the Executive Officer.

3. The discharger shall notify the Board if any activity has occurred or will occur which would result in the discharge, on a frequent or routine basis, of any toxic pollutant which is not limited by this Order.

4. Any discharge to a location other than the discharge point(s) specified in this Order will require a modification to this Order or submission of a second NPDES application.

5. The discharger shall comply with all items of the attached "Standard Provisions, Reporting Requirements and Definitions" dated December 1986 and modified January 1987, except items A.10, B.2, B.3, C.8 and C.11.

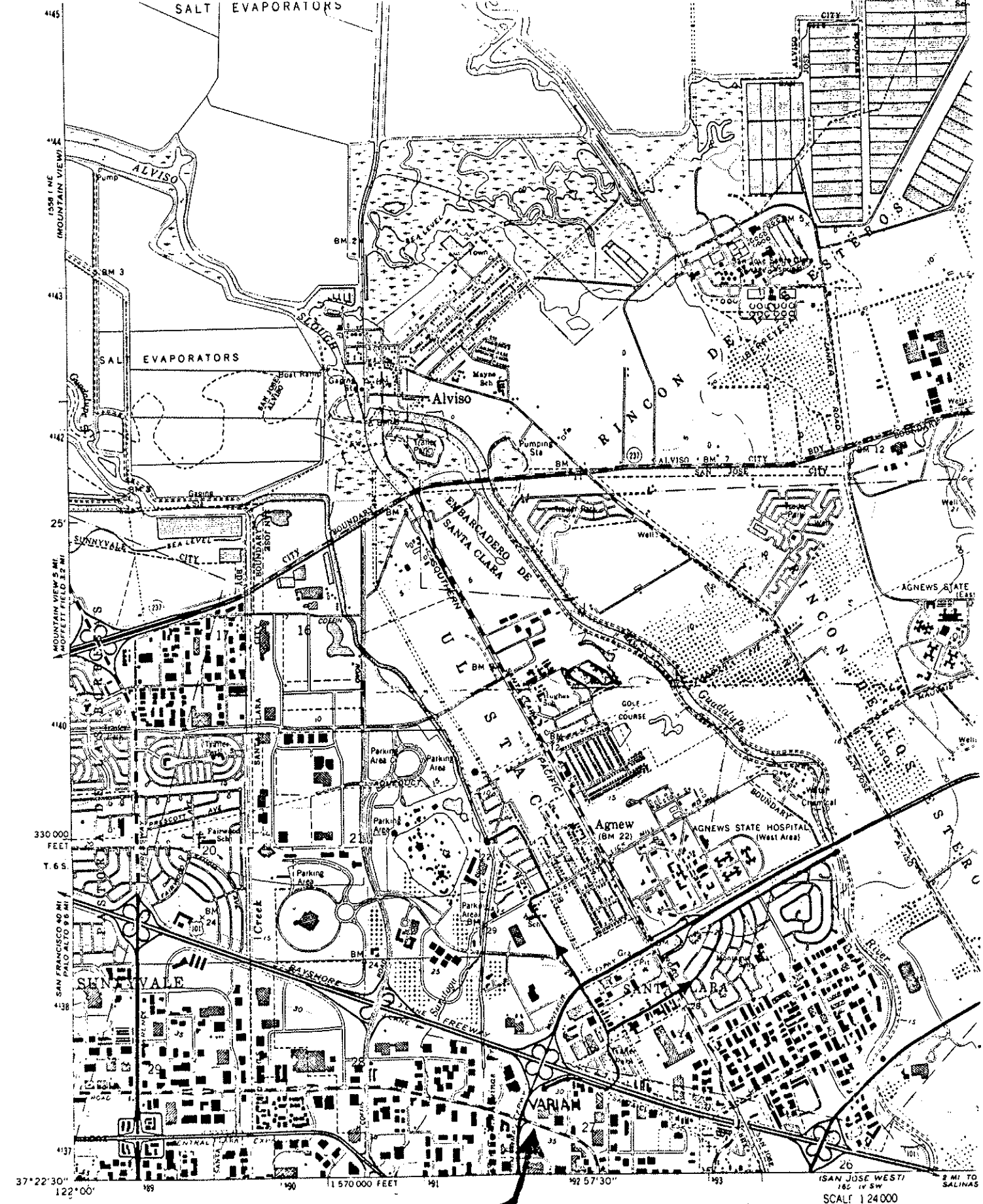
6. This Order expires March 18, 1997. The discharger must file a report of waste discharge in accordance with Title 23, Division 3, Chapter 9 of the California Code of Regulations no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

7. This Order shall serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective 10 days after date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 18, 1992.

STEVEN R. RITCHIE
Executive Officer

Attachments: Figure 1 - Location Map
Self-Monitoring Program



FORMER VARIAN FACILITY
3100 Jay Street
Santa Clara, California

FIGURE 1
LOCATION MAP

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR:

VARIAN ASSOCIATES, INC.
3100 JAY STREET
SANTA CLARA, SANTA CLARA COUNTY

NPDES NO. CA0029033

ORDER NO. 92-026

CONSISTS OF:

PART A Dated December 1986 and modified January 1987

PART B Adopted March 18, 1992

PART B

VARIAN ASSOCIATES, INC.
3100 JAY STREET
SANTA CLARA, SANTA CLARA COUNTY

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT

Station	Description
I-1	At a point in the Trench 1 groundwater collection system immediately prior to treatment by air stripping.
I-2	At a point in the Trench 2 groundwater collection system immediately prior to treatment by air stripping.

B. EFFLUENT

Station	Description
E-1	At a point immediately following treatment by air stripping.

C. RECEIVING WATERS

Station	Description
C-1	At a point in San Tomas Aquino Creek at least 100 feet but no more than 200 feet downstream from the storm drain discharge point of E-1 into San Tomas Aquino Creek.
C-2	At a point in San Tomas Aquino Creek at least 100 feet but no more than 200 feet upstream from the storm drain discharge point of E-1 into San Tomas Aquino Creek.

II. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis is provided in the attached Table A.

III. MODIFICATIONS TO PART A, DATED DECEMBER 1986 AND MODIFIED JANUARY 1987

All items of Self-Monitoring Program Part A, dated December 1986 and as modified January 1987 shall be complied with except for the following:

A. Additions to Part A: Section G.4.d.5: "Results from each required analysis and observation shall be submitted as laboratory originated data summary sheets in the quarterly self-monitoring reports. All chromatographic peaks for purgeable halocarbons and/or volatile organics shall be identified and quantified for all effluent samples. If previously unquantified peaks are identified in any effluent sample, then these peaks shall be confirmed based on analyses using chemical standards necessary to achieve proper identification and quantification. Results shall also be submitted for any additional analyses performed by the discharger at the specific request of the Board for parameters for which effluent limits have been established and provided to the discharger by the Board."

B. Deletions from Part A: Sections D.2.b., D.2.g., D.3.b., E.1.e.1, E.1.f., E.2.b., E.3., E.4., E.5., F.2.b., G.2., G.4.b., and G.4.f.

C. Modifications to Part A: For the following, the discharger shall comply with the Sections as changed and reported herein:

1. Section D.1. is changed to read:

   "Samples of influent shall be collected according to the schedule in Part B and shall not include any plant recirculation or other sidestream wastes. Deviation from this must be approved by the Executive Officer."

2. Section D.2.a. is changed to read:

   "Samples of effluent and receiving waters shall be collected at times coincident with influent sampling unless otherwise stipulated. The Regional Board or Executive Officer may approve

an alternative sampling plan if it is demonstrated that expected operating conditions warrant a deviation from the standard sampling plan."

3. Section D.2.d. is changed to read:

"If two consecutive samples of any one constituent or parameter monitored on a weekly or monthly basis in a 30-day period exceed the effluent limit or are otherwise out of compliance, or if the required sampling frequency is once per month or less (quarterly, annually or other) and the sample or parameter exceeds the limit or is otherwise out of compliance, the discharger shall implement procedure(s) acceptable to or approved by the Board's Executive Officer, on a case by case basis."

4. Section D.2.e. is changed to read:

"If any instantaneous maximum limit is exceeded, within 24 hours of receiving the analytical results indicating the violation, a confirmation sample shall be taken and analyzed with 24 hour turn-around time. If the instantaneous maximum is violated in the second sample, the discharge shall notify Regional Board staff immediately. The Executive Officer may order the discharge to be terminated, on a case-by-case basis."

5. In Section F.1., the phrase "(at the waste treatment plant)" is changed to read, "(to Regional Board or U.S. Environmental Protection Agency staff for inspection)."

6. Section F.2.a. is changed to read:

"Record flows from totalizing meters every two weeks and calculate average daily flow for each month."

7. Section F.2.b. is changed to read:

"Establish flows per minute and estimate flow in gallons per day."

8. Quarterly written reports required in Section G.4 shall be filed quarterly by the thirtieth day of the following month.

9. Section G.4.e is changed to read:

"Summary tabulations of the data shall include, for each constituent, total number of analyses, maximum, minimum, and average values for each period. Total flow data shall also be included. This information shall be prepared in a format similar to EPA Form 3320-1. This information shall be submitted only to the Board:

Executive Officer
California Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, CA 94612

10. The Annual Report required in Section G.5. shall be submitted by January 30 of each year in place of the quarterly report due on the same day.

IV. MISCELLANEOUS REPORTING

If any chemicals or additives are proposed to be used in the operation and/or maintenance of the ground water extraction/treatment system, the discharger shall obtain the Executive Officer's concurrence prior to use. The details concerning such approved use shall be reported in the next periodic report submitted to the Board.

VARIAN ASSOCIATES, INC.
3100 JAY STREET
SANTA CLARA, CA
SELF-MONITORING PROGRAM

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 92-026.

2. Was adopted by the Board on March 18, 1992.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer or the Board.

STEVEN R. RITCHIE
Executive Officer

Attachments: Table A
Figure 1 - Location Map
Figure 2 - Site Map

TABLE A
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	I-1; I-2	E-1	C-1; C-2
TYPE OF SAMPLE	G	G	G
Flow Rate (mgd)	cont	cont	-
Bioassay 96-hr % survival (flow-through or static)	-	Y	-
Ammonia Nitrogen (mg/l & kg/day)	-	V	-
Turbidity (NTU's)	Q	Q	-
pH (units)	M/Q	M/Q	Q
Dissolved Oxygen (mg/l and % saturation)	-	Q	Q
Temperature (°C)	M/Q	M/Q	Q
Standard Observations	-	-	Q
Arsenic (mg/l)	-	Y	-
Cadmium (mg/l)	-	Y	-
Chromium (hexavalent) (mg/l)	-	Y	-
Copper (mg/l)	-	Y	-
Cyanide (mg/l)	-	Y	-
Lead (mg/l)	-	Y	-
Mercury (mg/l)	-	Y	-
Nickel (mg/l)	-	Y	-
Selenium (mg/l)	-	Y	-
Silver (mg/l)	-	Y	-
Zinc (mg/l)	-	Y	-
EPA Method 601 with Freon 113	M/Q	M/Q	Y
EPA 624*	Y	Y	Y

VARIAN ASSOCIATES, INC.
3100 JAY STREET
SANTA CLARA
SELF-MONITORING PROGRAM

LEGEND FOR TABLE A

TYPES OF SAMPLES

G = grab sample
C-24 = 24 hr. composite
Cont. = continuous sampling
DI = depth integrated sample
BS = bottom sediment sample
O = observation
- = none required

TYPES OF STATIONS

I = intake or influent stations
E = effluent sampling stations
D = discharge point sampling stations
C = receiving water sample stations
L = basin and/or pond levee stations
B = bottom sediment station
G = groundwater station

FREQUENCY OF SAMPLING

H = once each hour
D = once each day
W = once each week
M = once each month

Y = once each year

V = varies; total ammonia nitrogen shall be analyzed and unionized ammonia calculated whenever fish bioassay test results fail to meet the specified percent survival

2/W = 2 days per week
5/W = 5 days per week
2/M = 2 days per month
2/y = once in March and once in September
Q = quarterly, once in March, June, September, and December

W/M = weekly for first three months after startup of operations and reduced to monthly thereafter

W/Y = weekly for first three months after startup of operations and reduced to annually thereafter

M/Y = monthly for first six months after startup of operations and reduced to annually thereafter

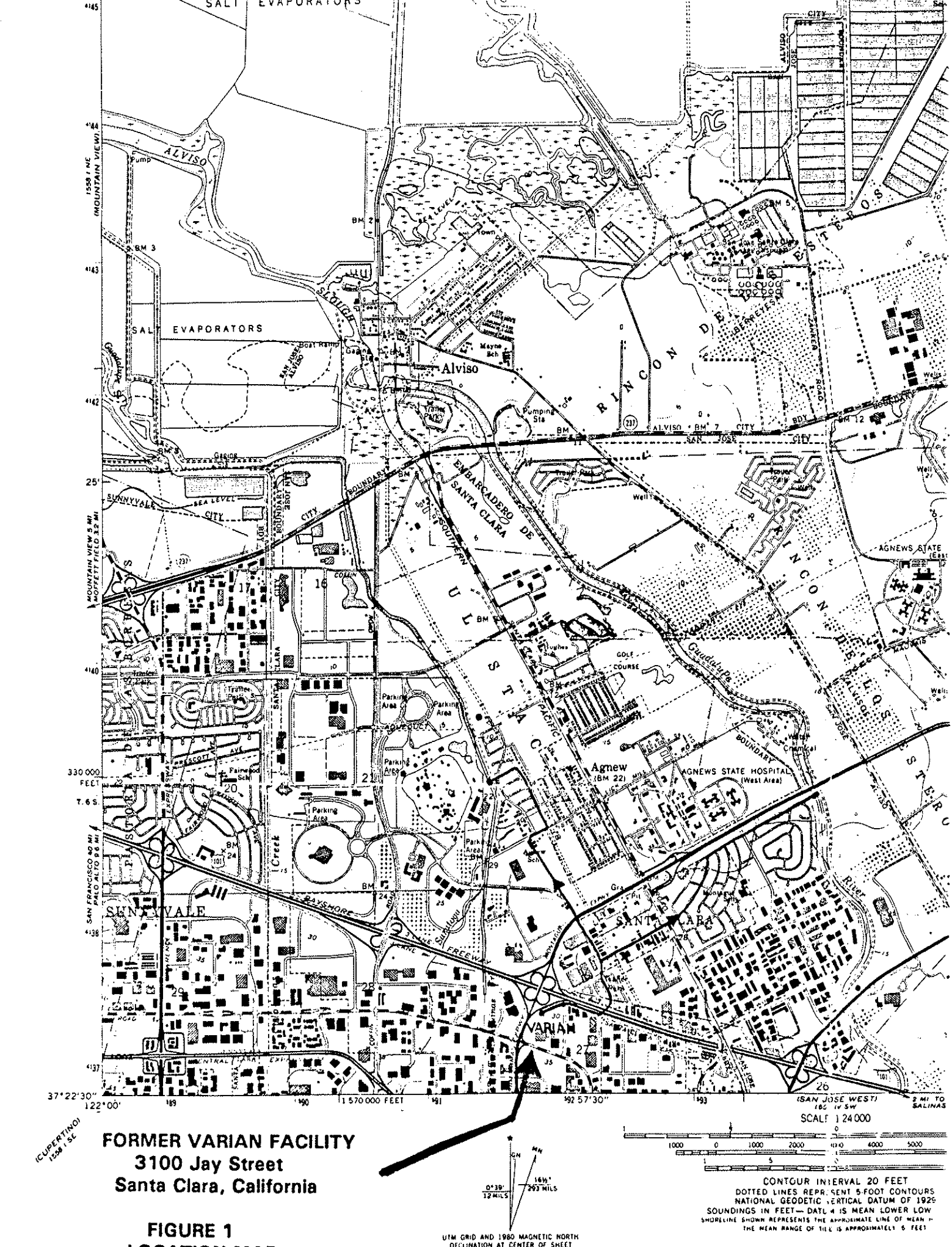
2D = every 2 days
2W = every 2 weeks
3M = every 3 months
Cont = continuous

Q/Y = quarterly for first year after permit reissuance, reduced to annually thereafter

W/Q = weekly for first three months after startup of operations and reduced to quarterly thereafter

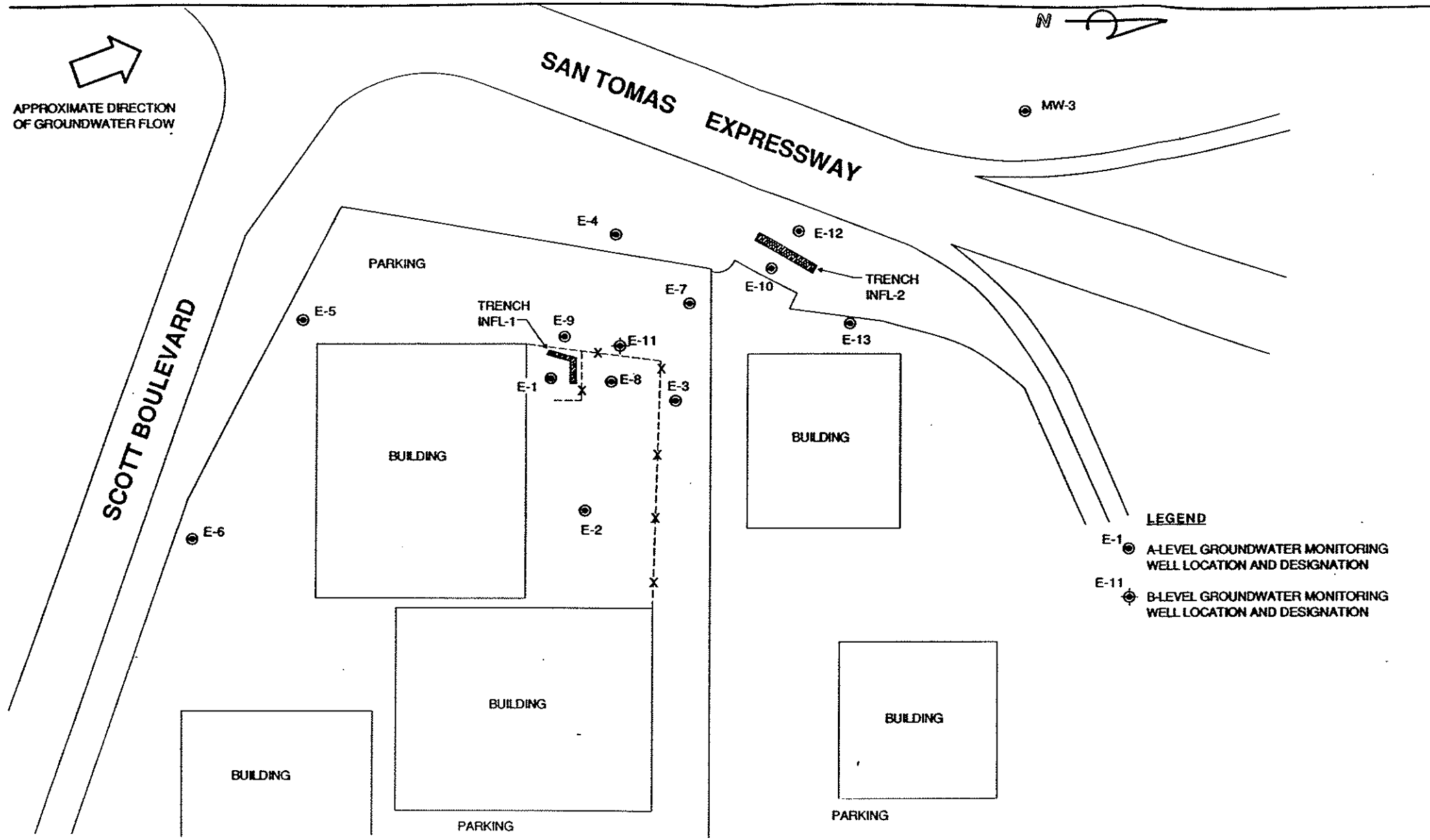
M/Q = monthly for first three months after permit re-issuance and reduced to quarterly thereafter

* When water samples are tested by EPA Method 624, it is not necessary to test the samples by EPA Methods 601 and 602.



FORMER VARIAN FACILITY
3100 Jay Street
Santa Clara, California

FIGURE 1
LOCATION MAP



FORMER VARIAN FACILITY
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Santa Clara, California

FIGURE 2 SITE MAP